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10/020,461	12/14/2001	Hichem M'Saad	A6123/T43700	9343
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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/020,461  
Filing Date: December 14, 2001  
Appellant(s): M'SAAD ET AL.

**MAILED**  
NOV 14 2006  
**GROUP 1700**

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Milan M. Vinnola  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 8 September 2006 appealing from the Office action mailed 17 January 2006.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal:

As indicated by Appellant: US Patent Application 10/997,715 contains an appeal which may affect or be directly affected on the Board's decision.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. For clarification purposes, the rejections have been clarified to reflect that Appellant's admission is used in the rejection of claims 29-42.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

6,154,582	BAZYLENKO	11-2000
5,221,309	KYOTO	6-1993
5,136,671	DRAGONE	8-1992
6,614,977	JOHNSON	9-2003

Applicant's admission located at the bottom of page 3 of the paper of 23 August 2004.

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 103***

Claims 1-2, 15-16, and 22-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bazylenko 6154582 and Kyoto 5221309 and optionally in view of Dragone 5136671 (and Appellant's admission for claims 29-42).

(It is noted that Appellant's admission was first utilized in the rejection of claims 29-42 in the paper of 9/14/2004. Since then, Appellant has not revoked the admission or in any way indicated that it was improperly utilized in any rejection, nor disagreed with the conclusion that if the method claims 1-28 fall, then claims 29-42 also fall.)

**Claim 1. A method of forming an optical waveguide, the method comprising:**

See Bazylenko, col. 1, lines 21-25.

**flowing a silicon source gas into a process chamber;**

Figure 1A of Bazylenko shows the process chamber 104 and the silicon source gas (SiH<sub>4</sub>) flowing into it.

**flowing an oxygen source gas into the process chamber;**

Figure 1A also shows this.

**forming a high-density plasma in the process chamber from the silicon source gas and the oxygen source gas;**

See claim 5 of Bazylenko, for example.

**forming a plurality of separated silicate glass optical cores over an undercladding layer disposed within the process chamber with the high-density plasma,**

Figure 6f of Bazylenko shows a formed core 14, over undercladding layer 13. Bazylenko uses the term "buffer layer" rather than "undercladding layer". Bazylenko does not disclose a plurality of the cores. It would have been obvious to create more than one waveguide core so as to be able to multiply the amount of data carried.

**From MPEP 2144.04**

**B. Duplication of Parts**

In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960) (Claims at issue were directed to a water-tight masonry structure wherein a water seal of flexible material fills the joints which form between adjacent pours of concrete. The claimed water seal has a "web" which lies \*\* in the joint, and a plurality of "ribs" \*\* >projecting outwardly from each side of the web into one of the adjacent concrete slabs. <The prior art disclosed a

flexible water stop for preventing passage of water between masses of concrete in the shape of a plus sign (+). Although the reference did not disclose a plurality of ribs, the court held that mere duplication of parts has no patentable significance unless a new and unexpected result is produced.).

Dragone is optionally applies to show that multiple separate waveguides is conventional.

**the separated silicate glass optical cores defining a sequence of gaps;**

This would be clearly met by the above obvious duplication of cores.

**and depositing an uppercladding layer over the plurality of separated silicate glass optical cores,**

See figure 5, feature 16 of Bazylenko.

**wherein each of the silicate glass optical cores is formed with a refractive index greater than a refractive index of the undercladding layer such that each of the optical cores has a contrast relative to the undercladding layer greater than 2%.**

Bazylenko does not teach this 2% difference. Kyoto teaches (col. 1, lines 23-25 and 50-54) that a large index difference between the core and cladding allows for easy propagation of light. And that up to 4% difference is "usual" in certain applications. It would have been obvious to use as large a contrast as desired – depending upon the intended application of the final device.

Claim 2: see col. 5, lines 46-62 which teaches a energy greater than 3 Watts/cm and col. 6, line 12 teaches a pressure less than 100 millitorr. (100 millitorr = 13.3 Pa)

Claim 15 is substantially the same as claim 1, except that it also specifies how the cores are made: see col. 9, lines 15-20.

Claim 16: from col. 9, line 5: it is a self-biased voltage.

Claim 22 is substantially the same as claim 2, except that claim 22 requires the use of a dopant gas to cause the core to have an index above 1.46. : see col. 2, lines 22-24 which teaches that the nitrogen free process is only a preferred embodiment. It is clear that such is an indication that one can use nitrogen in the process – as a non-preferred embodiment. The use of nitrogen would result in SiON glass that has a high refractive index (see Appellant's specification page 26, lines 3-5).

Claim 23: see col. 6, line 25.

Claims 24-26 are clearly met as per the above discussions.

Claims 29-36 are directed to a substrate processing system (rather than the method of claims 1 and 15.) Claims 37-42 are directed to a computer-readable storage medium. The Office made a restriction requirement in this application. At the bottom of page 3 of the paper of 23 August 2004 Appellant argued "the claims included in those groups should be rejoined with the claims of Group I as they necessarily stand or fall together". Since the method claims fall with the prior art, the system claims (29-36) and storage medium claims (37-42) also fall with the prior art and thus would have been obvious. The restriction requirement (6/15/04, page 5) and MPEP 818.03(b) reflect that

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such admissions can be used in a rejection under 35 USC 103. Since Appellant has not provided separate arguments as to the patentability of claims 29-42, it is presumed that Appellant maintains that these claims stand or fall with the method claims.

Claims 1-4, 6-13, 21-26 and 29-42 rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson and Kyoto and optionally in view of Dragone 5136671 (and Applicant's admission for claims 29-42).

Johnson teaches the invention substantially at col.7, lines 12-20, figures 3A-B and col. 4, lines 31-32. Johnson does not disclose a plurality of the cores. It would have been obvious to create more than one waveguide core so as to be able to multiply the amount of data carried.

**From MPEP 2144.04**

**B. Duplication of Parts**

*In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960) (Claims at issue were directed to a water-tight masonry structure wherein a water seal of flexible material fills the joints which form between adjacent pours of concrete. The claimed water seal has a "web" which lies \*\* in the joint, and a plurality of "ribs" \*\* >projecting outwardly from each side of the web into one of the adjacent concrete slabs. <The prior art disclosed a flexible water stop for preventing passage of water between masses of concrete in the shape of a plus sign (+). Although the reference did not disclose a plurality of ribs, the court held that mere duplication of parts has no patentable significance unless a new and unexpected result is produced.).

Dragone is optionally applies to show that multiple separate waveguides is conventional.

Johnson also does not teach the 2% refractive index difference. Kyoto teaches (col. 1, lines 23-25 and 50-54) that a large index difference between the core and cladding allows for easy propagation of light. And that up to 4% difference is "usual" in

certain applications. It would have been obvious to use as large a contrast as desired – depending upon the intended application of the final device.

Claim 2: The operating parameters are not taught by Johnson – it would have been obvious to perform routine experimentation to determine the optimal plasma parameters – depending upon the particular apparatus and the desired resultant product.

Claim 3 is clearly met.

Claim 4: see col. 7, lines 14-15 of Johnson.

Claim 6: see col. 7, lines 13-20: This comes to a ratio of about 12:1.3 – which is well above the 3:1 ratio.

Claim 7: is met as per the above cited portions, col 3, line 33 and col. 4, line 23. It is deemed that since deuterium is a form of hydrogen, that SiD<sub>4</sub> is a silane.

Claim 9-11: such would have been obvious depending upon how many waveguides are being made. Making many large waveguides in a large chamber verses a few small waveguides in a small chamber would require different amounts of gases. IT would have been obvious to make as many waveguides as desired in a batch – which would take a corresponding increase in gas flow rates.

Claim 8: the ratio is not disclosed in Johnson, it would have been obvious to perform routine experimentation to determine the optimal amount of each component.

Claim 12: see col. 7, line 32. It is deemed that annealing, is a step, sub-process and/or a sub-step of the plasma process. The broadest reasonable interpretation of the term “plasma process” is broad enough that it reads on the annealing as being part of

the process or as being separate from the process. In other words: the term "plasma process" is broad enough that it neither necessarily excludes nor necessarily includes annealing.

Claim 13: see col. 4, lines 23-25. It is inherent that the glass would be doped with Ge or P.

Claim 21: see col. 7, line 32.

Claim 28 is met for substantially the same reason claim 13 is.

Claims 22-26 are met for substantially the same reasons given above.

Claims 29-36 are directed to a substrate processing system (rather than the method of claims 1 and 15.) Claims 37-42 are directed to a computer-readable storage medium. The Office made a restriction requirement in this application. In response to the requirement Appellant argued "the claims included in those groups should be rejoined with the claims of Group I as they necessarily stand or fall together", see the bottom of page 3 of the paper of 23 August 2004. Since the method claims fall with the prior art, the system and storage medium claims also fall with the prior art. The restriction requirement (6/15/04, page 5) and MPEP 818.03(b) reflect that such admissions can be used in a rejection under 35 USC 103. Since Appellant has not provided separate arguments as to the patentability of claims 29-42, it is presumed that Appellant maintains that these claims stand or fall with the method claims.

**(10) Response to Argument**

It is argued that Bazylenko does not disclose or suggest plural cores. This is correct. Nevertheless such would have been obvious for the reasons set forth in the rejection.

It is argued that Dragone does not disclose single waveguides with multiple cores, rather Dragone has a multiplex system with a plurality of separate waveguides. Examiner does not understand the basis for this argument. The present claims do not require a waveguide that has multiple cores. Looking to the specification to see if Appellant describes a waveguide as having multiple cores, [37] of page 7 does suggest this. However, it also indicates that the waveguide 300 is on top of (i.e. distinct from) the substrate 310, but figure 3 indicates that 310 is part of the waveguide. Thus the disclosure is not completely definitive. Light can be guided in each core 330 – thus applicant actually has 2 waveguides. See also Applicants figure 1 and [04] which indicates that a single core can be considered to be a waveguide. Thus, even if figure 3 can be said to be a single waveguide- one could also say it has two waveguides. Most importantly, it is clear from [05] of Appellant's specification that the present invention is directed to making multiplexers. A claim interpretation that puts the preferred embodiment outside the claim is “rarely, if ever, correct and would require a highly persuasive evidentiary support”, Vitronics, at 1583. Although Appellant's [05] does not indicate that multiplexers is the preferred embodiment, the same principle applies: there should be some evidence or reason to interpret the present claims as not reading

on multiplexers – given that Appellant's disclosure indicates multiplexers can be made with the invention.

It is also argued that Examiner provides no direction as to how one would modify the Bazylenko method to make Dragone multiplexers. Dragone as well as Appellant's [05] indicate that multiplexers are conventional. Bazylenko disclose the method can be used to create "any optical device or component" (col. 3, lines 8-10). There is a presumption that Bazylenko's patent is valid and thus presumed to be enabled. Applicant has not provided any evidence or rationale to support the assertion that one could not use Bazylenko's method to make any optical device or component – such as Dragone's multiplexer.

It is further argued that at best the combination of references would to separate manufacture of cores and later combining them. There is no evidence or rationale to support this assertion. Dragone teaches to pattern the waveguides by photolithographic techniques (col. 6, lines 41-46): it is clear that the multiplexer is not assembled as argued by appellant. Col. 9, lines 17-24 discloses that material is between the cores (since gases have refractive indices that are very near 1.0000).

As to the argument that the present invention is not mere duplications of parts. Examiner disagrees; this is a clear issue.

As to the argument that Bazylenko does not teach to having an index difference of greater than 2%. This is largely irrelevant, because the rejection does not state such. Nevertheless, the greater than 2% difference would have been obvious for the reasons set forth in rejection.

It is argued that one would not have a reasonable expectation of success for combining Kyoto and Bazylenko. Appellant's point relies on combining flame hydrolysis with PECVD; this is not very germane because the rejection does not suggest such a combination. Kyoto is relied on to show what is well known: that a 2% difference is old and that it has advantages. In other words: it is not very relevant whether the references can be combined in the manner in which Appellant suggests, because the rejection is not based on that combination. Rather the rejection is based on the combination set forth in the rejection. It is very reasonable to expect that one or ordinary skill could create glasses with a mere difference in indices of 2%.

Appellant traverses the rejection of claim 15 for the same reasons given for claim 1 as discussed above. The arguments are not persuasive for the reasons given above.

It is argued that claims 29 and 37 are allowable for the same reasons claim 1 is allowable. No separate argument for patentability is given. This is deemed to further affirmation that claims 29-42 stand or fall with the method claims.

Regarding the nitrogen source gas in dependent claims, it is argued that Bazylenko discloses nitrogen as a disfavoured source gas.

From MPEP 2145:

A prior art reference that "teaches away" from the claimed invention is a significant factor to be considered in determining obviousness; however, "the nature of the teaching is highly relevant and must be weighed in substance. A known or obvious composition does not become patentable simply because it has been described as somewhat inferior to some other product for the same use." *In re Gurley*, 27 F.3d 551, 554, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994) (Claims were directed to an epoxy resin based printed circuit material. A prior art reference disclosed a polyester-imide resin based printed circuit material, and taught that although epoxy resin based materials have acceptable stability and some degree of flexibility, they are inferior to polyester-imide resin based materials. The court held the claims would have been obvious over the prior art because the reference taught epoxy resin based material was useful for applicant's purpose, applicant

did not distinguish the claimed epoxy from the prior art epoxy, and applicant asserted no discovery beyond what was known to the art.)

Thus it is not very relevant that Bazylenko does not favour using nitrogen. The use of nitrogen in the mixture does not become patentable simply because it is described as being inferior to using a mixture without nitrogen.

The arguments regarding the 35 USC 103 rejection with Johnson as the primary reference are substantially the same as those rejections applied to the Bazylenko-based rejection. But for the dependent claims, it is argued that one would not be motivated to optimize the temperature, pressure and power density.

As pointed out in MPEP 2144.05

## II. OPTIMIZATION OF RANGES

### A. Optimization Within Prior Art Conditions or Through Routine Experimentation

Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation."

It is also argued that Johnson does not disclose the use of molecular nitrogen and that PECVD methods do not generally produce enough energy to break the nitrogen-nitrogen bond of molecular nitrogen. The rejection clearly indicates that nitrogen is used (col. 7, lines 14-15 of Johnson).

As to the assertions that the rejection does not provide for various features of "certain of the dependent claims": As far as Examiner can tell, all of the claim limitations

are addressed in the rejection. Applicant's non-specific assertions regarding limitations of unspecified claims is deemed to be a general assertion of patentability.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

John Hoffmann



11-13-06

Conferees:

Chris Fiorilla



Kathryn Gorgos

